

FOOT DISORDERS OF GOATS (*CAPRA HIRCUS*) IN BIHAR, INDIA

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ABSTRACT

*The Bihar, a state of India with 2nd largest goat (*Capra hircus*) population in the country contribute a substantial income to the poor people, but due to foot disorders the farmers face a great economic loss. To find out the types of disorder, limb affected, sex, age group, season etc, the study was carried out for 34 months in different places in the state. The results revealed that out of 2379 surveyed animals 479 (19.98%) were affected by various foot disorders. Highest incidences were of overgrown hooves (12.27%), followed by scissors claw (3.42%), interdigital lesions (1.71%), cracked hoof (1.00%) and other disorders includes swelling /wound at heel, congenital defects, traumatic injury, chronic laminitis, interdigital growth etc. Involvement of fore limb is more (8.17%) than the hind limb (5.01%) and both limb (6.80%). Statistical analysis revealed that there were significant ($P < 0.01$) differences among different sexes, age groups and seasons in affection of foot disorders in the goats. Males were less affected (14.46%) than females (22.95%). Adult goats (29.74%) were more susceptible than young animals (7.07%). Seasonal effect was more during monsoon (6.07%), followed by post- monsoon (5.93%), pre- monsoon (5.60%) and lowest was in winter months (2.38%). The foot disorders in goats may be prevented with better management practices like good nutrition, housing management and health care etc in time.*

KEYWORDS: Foot, Disorders, Goat (*Capra hircus*), Hoof, Season

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INTRODUCTION

Farmers of Bihar state in India generally maintain a small flock of goats which serve as a source of subsidiary income to the family. Bihar is having 10.17 million of goats which is 7.24% of total livestock population of India. Density of goat population in Bihar is 107.97 numbers/ sq km (Bhatt et al, 2013). The annual normal rainfall of the state is 1205 mm and average number of rainy days is 52.5 (Dey et al, 2007). Foot diseases of goat cause a substantial loss to the farmers in terms of milk and meat production. Unscientific management system and poor health care are the main reason for foot disorders in goat. In India Pegu et al (1991) in Assam, Singh et al (1993) in Rajasthan, Chakrabarti et al (1996) in Kerala and Chakrabarti (1997) in Tripura reported different type of foot disorders in goat. But, there is no such information available from Bihar state which rank 2nd in goat population (Rajasthan First) in India. Therefore, the present study was carried out to find the incidences of foot abnormalities in goats in Bihar state.

MATERIALS AND METHODS

In total 2397 goats were randomly examined in various animal health camps held in different districts viz.

Ara, Patna, Katihar, Samastipur, Sheohar etc, institute farm, animal fair and local markets. The data were collected during June 2011 to April 2014. Each animal was examined carefully to find out the type of disorder of foot and distribution of affected limb under various sexes, age groups and seasons. Data were subjected into Chi-square analysis to test the homogeneity of the data collected from different breeds, sexes, age groups and seasons as per Snedecor and Cochran (1989).

RESULTS AND DISCUSSIONS

Incidence of different Types of Foot Disorders

The results of foot disorders of goats in Bihar indicate that out of 2397 animals 479 (19.98%) animals were affected by various foot abnormalities. The present findings are in agreement with the findings of Pegu *et al* (1991) who reported 19.4%. But, Chakrabarti (1997) reported 16.55% which is comparable to the present findings whereas, Singh *et al* (1993) observed much lower (9.79%) incidences of foot disorders in goat. High incidences of foot disorder in goats may be due to poor managerial conditions provided to the goats including housing, nutrition, health care etc. In Bihar goats are usually reared by the small and marginal farmers or by the landless labourers. Hence, the facility of scientific management may not be available to the animals.

Among the disorders highest incidence was observed in overgrown hooves (12.27%) followed by scissors claw (3.42%), interdigital lesions (1.71%), cracked hoof (1.00%), swelling/wound at heel (0.79%), congenital deformity (0.33%), traumatic injury (0.25%), chronic laminitis (0.13%) and interdigital growth (0.08%).

Table 1: Different types of Foot Disorder in Goats

Sl. No.	Types of Disorders	Animal Affected		% of Affected out of Total Animals
		Number	Percentage	
1	Overgrown hooves	294	61.38	12.27
2	Scissors claw	82	17.11	3.42
3	Interdigital lesions	41	8.56	1.71
4	Cracked hoof	24	5.01	1.00
5	Swelling /wound at heel	19	3.97	0.79
6	Congenital defects	8	1.67	0.33
7	Traumatic injury	6	1.25	0.25
8	Chronic laminitis	3	0.63	0.13
9	Interdigital growth	2	0.42	0.08
	Total	479	100.00	19.98

The present findings are more or less comparable with the findings of Chakrabarti (1997) and opined that the various foot disorders may be due to anatomical, nutritional and lack of proper management. Salih *et al* (1988) observed that the occurrence of foot abnormalities depends upon combinations of environmental, managerial and stress factors. The high prevalence overgrown hooves could be due to lack of proper foot care, negligence in hoof trimming, more population of uncared, old and nonproductive animals (Lekharu *et al*, 1991, Singh *et al*, 1993 and Chakrabarti, 1997).

Involvement of Limb

Higher incidence of foot disorders were found in hind limb (40.92%) than fore limb (25.05%). Both the limbs were affected in 34.03% animals. Pegu *et al* (1991), Singh *et al*, 1993 and Chakrabarti (1997) also reported same trend of foot diseases in goat. Lekharu *et al* (1991) opined that more involvement of hind feet might be due to the fact that the front feet can move easily in vertical plane parallel with the midline of the animal, whereas the hind feet are forced out of this

plane. And also the hind feet are more often abnormally shaped than front feet and are more prone to faecal contamination. Nigam and Singh (1980), Russel *et al* (1982) and Gogoi *et al* (1982) also reported higher incidences of foot disorders in hind feet in bovine.

Table 2: Foot Disorders in Relation to Foot Affected in Goats

Sl. No.	Foot Affected	Animals Affected		% of Affected out Total Animals
		Number	Percentage	
1	Fore limb	196	40.92	8.17
2	Hind limb	120	25.05	5.01
3	Both limb	163	34.03	6.80
	Total	479	100.00	19.98

Foot Disorders in Relation to Sex of Animal and Age

Sex: Sex of animals had significant ($P < 0.01$) effect on occurrence of foot disorders in goats as more female animals were found to be affected (22.95%) than their male counterparts (14.46%). Gogoi *et al* (1982), Pegu *et al* (1991), Singh *et al* (1993) and Chakrabarti (1997) observed higher incidences of foot disorders in female than male. Salih *et al* (1988) opined that this may be due to higher population of females than male. But, Saikia *et al* (1992) reported almost equal chances of foot affection both in male and female animals. Male animals are generally sacrificed at younger age than female and if there is any abnormality in male also discarded or culled from the flock. This may be one of the reasons for fewer chances of foot abnormalities in male.

Table 3: Foot Disorders in Relation to Sex and Age Group of Animal

Variables	Animals	Number of Animals Observed	Number of Animals Affected	% of Animals Affected	χ^2 value
Sex	Male	837	121	14.46	24.57**
	Female	1560	358	22.95	
Age group	Young (below 3 years)	1032	73	7.07	188.88**
	Adult (above 3 years)	1365	406	29.74	

** $P < 0.01$

Age: Similarly, the effect of age on the prevalence of foot disorders in goats were found highly significant ($P < 0.01$). The incidences were more in adult animals (29.74%) than younger group (7.07%). Bouchaert (1964), Simon (1966) and Lekharu (1976), Saikia *et al* (1992) and Chakrabarti (1996) observed a lower incidence of foot disorders in young animals. This may be due to the fact that the young animals were relatively immune to foot problems. Besides, due to longer life span and with increasing age, the chances of foot disorders may be higher in adult animals.

Foot Disorders in Relation to Seasons

Similar to sex and age, different seasons also caused significant ($P < 0.01$) effect on prevalence of foot disorders in goats reared in Bihar. Incidences were found to be the highest in monsoon (30.48%), followed by post-monsoon (29.65%), pre-monsoon (27.97%) and in winter only 11.90% (Table 4). Chakrabarti (1997) reported higher incidences of foot disorders in monsoon and lowest in winter months in Tripura state in India. Maeiver and Horor (1987) also observed higher incidences in rainy season and lowest in winter. The higher incidence of foot disorders in goat during monsoon might be due to poor housing condition, increased humidity, softening of the floor and more mud and water contact (Maeiver and Horor, 1987 and Singh *et al*, 1993).

Table 4: Foot Disorder in Goats in Different Seasons

Sl. No.	Season	Number of Animals Observed	Animal Affected		% of Affected out Total Animals	χ^2 value
			Number	Percentage		
1	Pre-monsoon (March, April, May)	586	134	27.97	5.60	58.58**
2	Monsoon (June, July, August)	602	146	30.48	6.07	
3	Post-monsoon (September, October, November)	598	142	29.65	5.93	
4	Winter (December, January, February)	611	57	11.90	2.38	
Total		2397	479	100.00	19.98	

** P<0.01

CONCLUSIONS

It could be inferred from these observations that absence of scientific housing and nutritional management, improper health care and inadequate hygienic condition in animal sheds may be the main reasons for high prevalence of foot diseases in Bihar state in India. The economic loss to the farmers may be minimized by proper foot care to the animals and by adopting suitable managemental practices at field conditions in time.

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